

WHAT IS CLAIMED IS:

1. A method comprising:
  - detecting a tone in each data frame of a sequence of telephony signal data frames;
  - transmitting a first data frame of the sequence of telephony signal data frames
  - 5 immediately after detecting the tone therein;
  - deferring transmission of a last one or ones of the sequence of telephony signal data frames;
  - determining whether the tone is present in a next data frame that immediately follows the sequence of telephony signal data frames;
  - 10 if it is determined that the tone is not present in said next data frame, transmitting the last one or ones of the sequence of data frames and said next data frame; and
  - if it is determined that the tone is present in said next data frame, transmitting a respective replacement data frame in place of each one of the last one or ones of the sequence of data frames and in place of said next data frame.
- 15 2. The method of claim 1, wherein each of the replacement data frames represents a silence audio signal.
3. The method of claim 1, wherein the sequence of telephony signal data frames includes three telephony signal data frames.
4. The method of claim 3, further comprising:
  - 20 transmitting a second data frame of the sequence of telephony signal data frames, said second data frame immediately following said first data frame, said transmitting of

said second data frame occurring immediately after detecting the tone in said second data frame.

5. The method of claim 1, further comprising:

detecting that the tone is present in a subsequent data frame that immediately  
5 follows said next data frame; and

transmitting a replacement data frame that represents a silence audio signal in  
place of said subsequent data frame.

6. The method of claim 1, further comprising:

receiving a signal from a destination device, the signal indicative of a jitter  
10 condition detected by the destination device; and

determining, based at least in part on the received signal from the destination  
device, a number of data frames of which transmission is deferred.

7. A method comprising:

receiving a signal from a destination device, the signal indicative of a jitter  
15 condition detected by the destination device; and

determining, based at least in part on the received signal, a number of outbound  
telephony signal data frames for which transmission is to be deferred in case of detecting  
a tone in the outbound telephony signal data frames.

8. The method of claim 7, further comprising:

20 receiving a sequence of outbound telephony signal data frames;

detecting a tone in the received sequence of outbound telephony signal data frames; and

in response to the detected tone, deferring transmission of said determined number of frames from the received sequence of outbound telephony signal data frames.

5     9. The method of claim 8, further comprising:

transmitting said determined number of frames if the detected tone has a duration that is less than a predetermined duration; and

if the duration of the detected tone is at least equal to the predetermined duration, replacing each of said determined number of frames with a respective replacement data  
10    frame and transmitting said replacement data frames, each said replacement data frame representing a silence audio signal.

10. A method comprising:

analyzing a first telephony signal data frame to determine whether a tone is present in the first telephony signal data frame;

15       if it is determined that the tone is not present in the first telephony signal data frame, immediately transmitting the first telephony signal data frame;

if it is determined that the tone is present in the first telephony signal data frame, deferring transmission of the first telephony signal data frame;

analyzing a second telephony signal data frame to determine whether the tone is  
20    present in the second telephony signal data frame, the second telephony signal data frame immediately following the first telephony signal data frame in a sequence of telephony signal data frames;

if it is determined that the tone is not present in the second telephony signal data frame, transmitting the first and second telephony signal data frames immediately after said analyzing of the second telephony signal data frame; and

5 if it is determined that the tone is present in the second telephony signal data frame, transmitting a respective replacement data frame in place of each of the first and second telephony signal data frames.

11. The method of claim 10, further comprising:

analyzing a third telephony signal data frame to determine whether the tone is present in the third telephony signal data frame, the third telephony signal data frame  
10 immediately following the second telephony signal data frame in the sequence of telephony signal data frames;

transmitting the third telephony signal data frame if it is determined that the tone is not present in the third telephony signal data frame; and

transmitting a replacement data frame in place of the third telephony signal data  
15 frame immediately after said analyzing of the third telephony signal data frame if it is determined that the tone is present in the third telephony signal data frame and if it was determined that the tone was present in each of the first and second telephony signal data frames.

12. The method of claim 11, wherein each of the replacement data frames represents a  
20 silence audio signal.

13. The method of claim 10, further comprising:

determining that the tone is present in a telephony signal data frame that immediately precedes the first telephony signal data frame in the sequence of telephony signal data frames; and

5       deferring transmission of said telephony signal data frame that immediately precedes the first telephony signal data frame until said analyzing of said second telephony signal data frame.

14. An apparatus comprising:

a buffer; and

circuitry coupled to the buffer and operative to:

10               detect a tone in each data frame of a sequence of telephony signal data frames;

transmit a first data frame of the sequence of telephony signal data frames immediately after detecting the tone therein;

15               defer transmission of a last one or ones of the sequence of telephony signal data frames;

determine whether the tone is present in a next data frame that immediately follows the sequence of telephony signal data frames;

if it is determined that the tone is not present in said next data frame, transmit the last one or ones of the sequence of data frames and said next data frame; and

20               if it is determined that the tone is present in said next data frame, transmit a respective replacement data frame in place of each one of the last one or ones of the sequence of data frames and in place of said next data frame.

15. The apparatus of claim 14, wherein each of the replacement data frames represents a silence audio signal.

16. The apparatus of claim 14, wherein the sequence of telephony signal data frames includes three telephony signal data frames.

17. The apparatus of claim 16, wherein said circuitry is further operative to:

transmit a second data frame of the sequence of telephony signal data frames, said  
5 second data frame immediately following said first data frame, said transmitting of said  
second data frame occurring immediately after detecting the tone in said second data  
frame.

18. The apparatus of claim 14, wherein said circuitry is further operative to:

detect that the tone is present in a subsequent data frame that immediately follows  
10 said next data frame; and

transmit a replacement data frame that represents a silence audio signal in place of  
said subsequent data frame.

19. The apparatus of claim 14, wherein said circuitry is further operative to:

receive a signal from a destination device, the signal indicative of a jitter  
15 condition detected by the destination device; and

determine, based at least in part on the received signal from the destination  
device, a number of data frames of which transmission is deferred.

20. An apparatus comprising:

a buffer; and

20 circuitry coupled to the buffer and operative to:

receive a signal from a destination device, the signal indicative of a jitter condition detected by the destination device; and

determine, based at least in part on the received signal, a number of outbound telephony signal data frames for which transmission is to be deferred in case of  
5 detecting a tone in the outbound telephony signal data frames.

21. The apparatus of claim 20, wherein said circuitry is further operative to:

receive a sequence of outbound telephony signal data frames;

detect a tone in the received sequence of outbound telephony signal data frames;

and

10 in response to the detected tone, defer transmission of said determined number of frames from the received sequence of outbound telephony signal data frames.

22. The apparatus of claim 21, wherein said circuitry is further operative to:

transmit said determined number of frames if the detected tone has a duration that is less than a predetermined duration; and

15 if the duration of the detected tone is at least equal to the predetermined duration, replace each of said determined number of frames with a respective replacement data frame and transmit said replacement data frames, each said replacement data frame representing a silence audio signal.

23. An apparatus comprising:

20 a buffer; and

circuitry coupled to the buffer and operative to:

analyze a first telephony signal data frame to determine whether a tone is present in the first telephony signal data frame;

if it is determined that the tone is not present in the first telephony signal data frame, immediately transmit the first telephony signal data frame;

5 if it is determined that the tone is present in the first telephony signal data frame, defer transmission of the first telephony signal data frame;

analyze a second telephony signal data frame to determine whether the tone is present in the second telephony signal data frame, the second telephony signal data frame immediately following the first telephony signal data frame in a sequence of  
10 telephony signal data frames;

if it is determined that the tone is not present in the second telephony signal data frame, transmit the first and second telephony signal data frames immediately after analysis of the second telephony signal data frame; and

if it is determined that the tone is present in the second telephony signal data frame, transmit a respective replacement data frame in place of each of the first and  
15 second telephony signal data frames.

24. The apparatus of claim 23, wherein the circuitry is further operative to:

analyze a third telephony signal data frame to determine whether the tone is present in the third telephony signal data frame, the third telephony signal data frame  
20 immediately following the second telephony signal data frame in the sequence of telephony signal data frames;

transmit the third telephony signal data frame if it is determined that the tone is not present in the third telephony signal data frame; and

transmit a replacement data frame in place of the third telephony signal data frame immediately after said analyzing of the third telephony signal data frame if it is  
25 determined that the tone is present in the third telephony signal data frame and if it was



determined that the tone was present in each of the first and second telephony signal data frames.

25. The apparatus of claim 24, wherein each of the replacement data frames represents a silence audio signal.

5 26. The apparatus of claim 23, wherein the circuitry is further operative to:

determine that the tone is present in a telephony signal data frame that immediately precedes the first telephony signal data frame in the sequence of telephony signal data frames; and

10 defer transmission of said telephony signal data frame that immediately precedes the first telephony signal data frame until analysis of said second telephony signal data frame.

27. A system comprising:

an analog-to-digital converter to supply telephony signal data frames;

15 a buffer coupled to the analog-to-digital converter to temporarily store said telephony signal data frames; and

circuitry coupled to the buffer and operative to:

detect a tone in each data frame of a sequence of telephony signal data frames;

20 transmit a first data frame of the sequence of telephony signal data frames immediately after detecting the tone therein;

defer transmission of a last one or ones of the sequence of telephony signal data frames;

determine whether the tone is present in a next data frame that immediately follows the sequence of telephony signal data frames;

if it is determined that the tone is not present in said next data frame, transmit the last one or ones of the sequence of data frames and said next data frame; and

5 if it is determined that the tone is present in said next data frame, transmit a respective replacement data frame in place of each one of the last one or ones of the sequence of data frames and in place of said next data frame.

28. The system of claim 27, wherein each of the replacement data frames represents a silence audio signal.

10 29. The system of claim 27, wherein the sequence of telephony signal data frames includes three telephony signal data frames.

30. The system of claim 29, wherein said circuitry is further operative to:

transmit a second data frame of the sequence of telephony signal data frames, said second data frame immediately following said first data frame, said transmitting of said  
15 second data frame occurring immediately after detecting the tone in said second data frame.

31. The system of claim 27, wherein said circuitry is further operative to:

detect that the tone is present in a subsequent data frame that immediately follows said next data frame; and

20 transmit a replacement data frame that represents a silence audio signal in place of said subsequent data frame.

32. The system of claim 27, wherein said circuitry is further operative to:

receive a signal from a destination device, the signal indicative of a jitter condition detected by the destination device; and

determine, based at least in part on the received signal from the destination  
5 device, a number of data frames of which transmission is deferred.

33. An apparatus comprising:

a storage medium having stored therein instructions that when executed by a machine result in the following:

detecting a tone in each data frame of a sequence of telephony signal data frames;

10 transmitting a first data frame of the sequence of telephony signal data frames immediately after detecting the tone therein;

deferring transmission of a last one or ones of the sequence of telephony signal data frames;

determining whether the tone is present in a next data frame that immediately  
15 follows the sequence of telephony signal data frames;

if it is determined that the tone is not present in said next data frame, transmitting the last one or ones of the sequence of data frames and said next data frame; and

if it is determined that the tone is present in said next data frame, transmitting a respective replacement data frame in place of each one of the last one or ones of the  
20 sequence of data frames and in place of said next data frame.

34. The apparatus of claim 33, wherein each of the replacement data frames represents a silence audio signal.

35. The apparatus of claim 33, wherein the sequence of telephony signal data frames includes three telephony signal data frames.

36. The apparatus of claim 35, wherein the instructions further result in:

transmitting a second data frame of the sequence of telephony signal data frames,  
5 said second data frame immediately following said first data frame, said transmitting of  
said second data frame occurring immediately after detecting the tone in said second data  
frame.

37. The apparatus of claim 33, wherein the instructions further result in:

detecting that the tone is present in a subsequent data frame that immediately  
10 follows said next data frame; and

transmitting a replacement data frame that represents a silence audio signal in  
place of said subsequent data frame.

38. The apparatus of claim 33, wherein the instructions further result in:

receiving a signal from a destination device, the signal indicative of a jitter  
15 condition detected by the destination device; and

determining, based at least in part on the received signal from the destination  
device, a number of data frames of which transmission is deferred.